

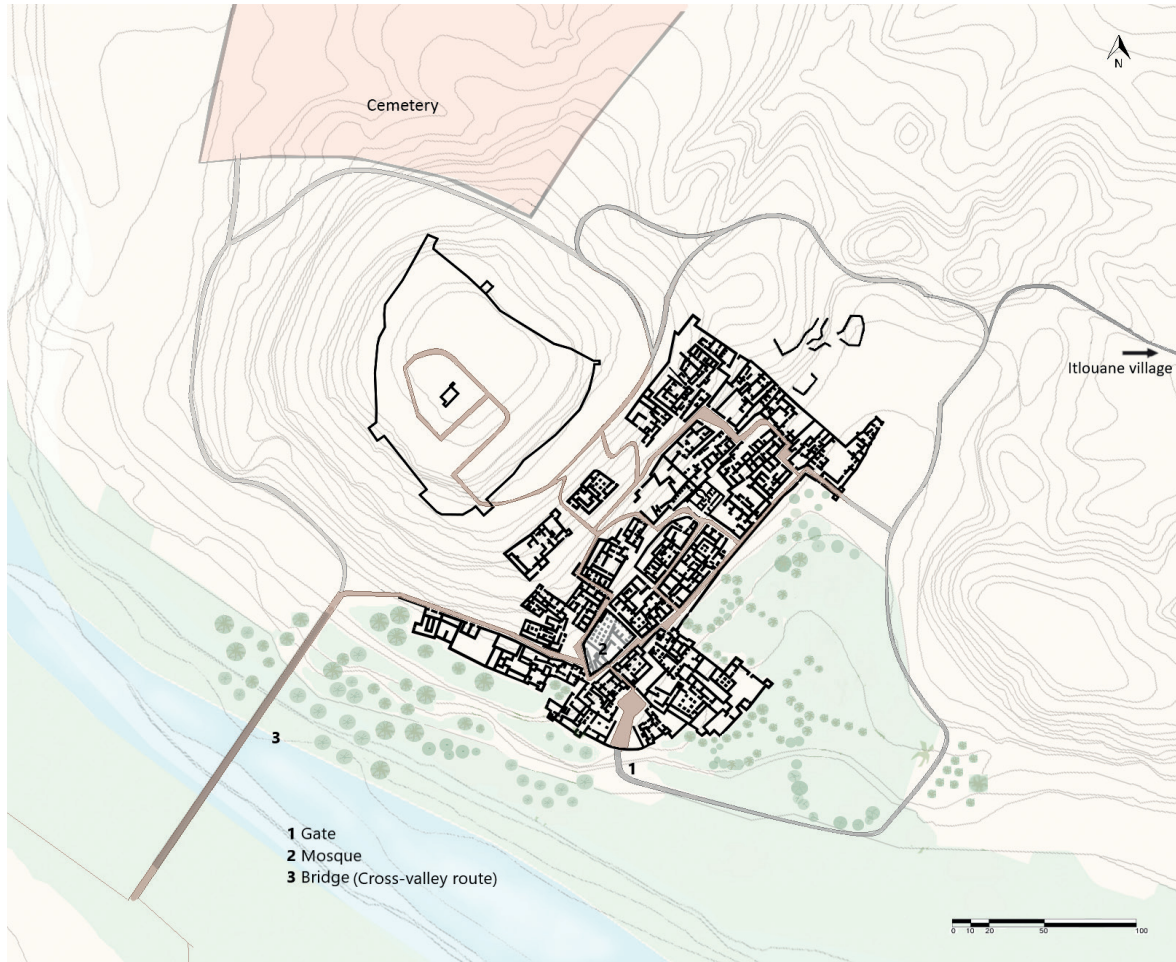
A TYPO-MORPHOLOGICAL INVESTIGATION: THE KSAR AIT BENHADDOU

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Ait Benhaddou stands as a distinctive example of a well-preserved earth settlement in southern Morocco. Located in the semi-desert basin near Ouarzazate city on the side of a hill, the fortified town is constructed primarily of rammed earth. The city communicates a progressive urban pattern arrangement, featuring distinct characters in terms of architectural style and religious identity and a noticeable development in the building typologies.

The study investigates the typo-morphological analysis via the application of the Caniggian school of thought, which identifies urban tissue development through a theoretical guide of attractors and repellers that shape the direction of urban growth.

The theoretical framework delivers a conscious explanation of the formation of Ait Benhaddou on a territorial and urban scale by first investigating the territorial setting that reveals the town's placement according to geographical attractors. Further, a closer look at the urban scale provides a guide for comprehending the urban tissue following the theory of urban attractors. To further understand the logic of the urban expansion, social, religious, and commercial



history are included to support the typo-morphological investigation and form an all-inclusive understanding of Ksar Ait Benhaddou's expansion.

Initially, the urban tissue introduces two fortification walls, one on the hill that stands as a geographical shelter and refuge place enclosed by the city wall and another fort surrounding the Ksar downhill, navigated by a street network that links both forts together.

The results of the typo-morphological study begin with identifying the hillfort as the birthplace of Ait Benhaddou and the birthplace of the urban route system and indicate the urban expansion starting with the hillfort and ending by the valley side (Fig. 1). The development occurs through several attractor points that shape the deviation of routes, such as the gates and the mosque that present a social, religious, and public place. Consequently, the street network initiates from the highest point of the hill and continues downhill to forge the urban grid, producing a route deviation system directed from the east towards the west that elaborates on socio-economic changes.

Figure 1. Map of the Ksar Ait Benhaddou and the street network connecting the hilltop to the street network, indicating the location of the mosque and valley gate as urban attractors guiding the urban growth.

Source: Author's work

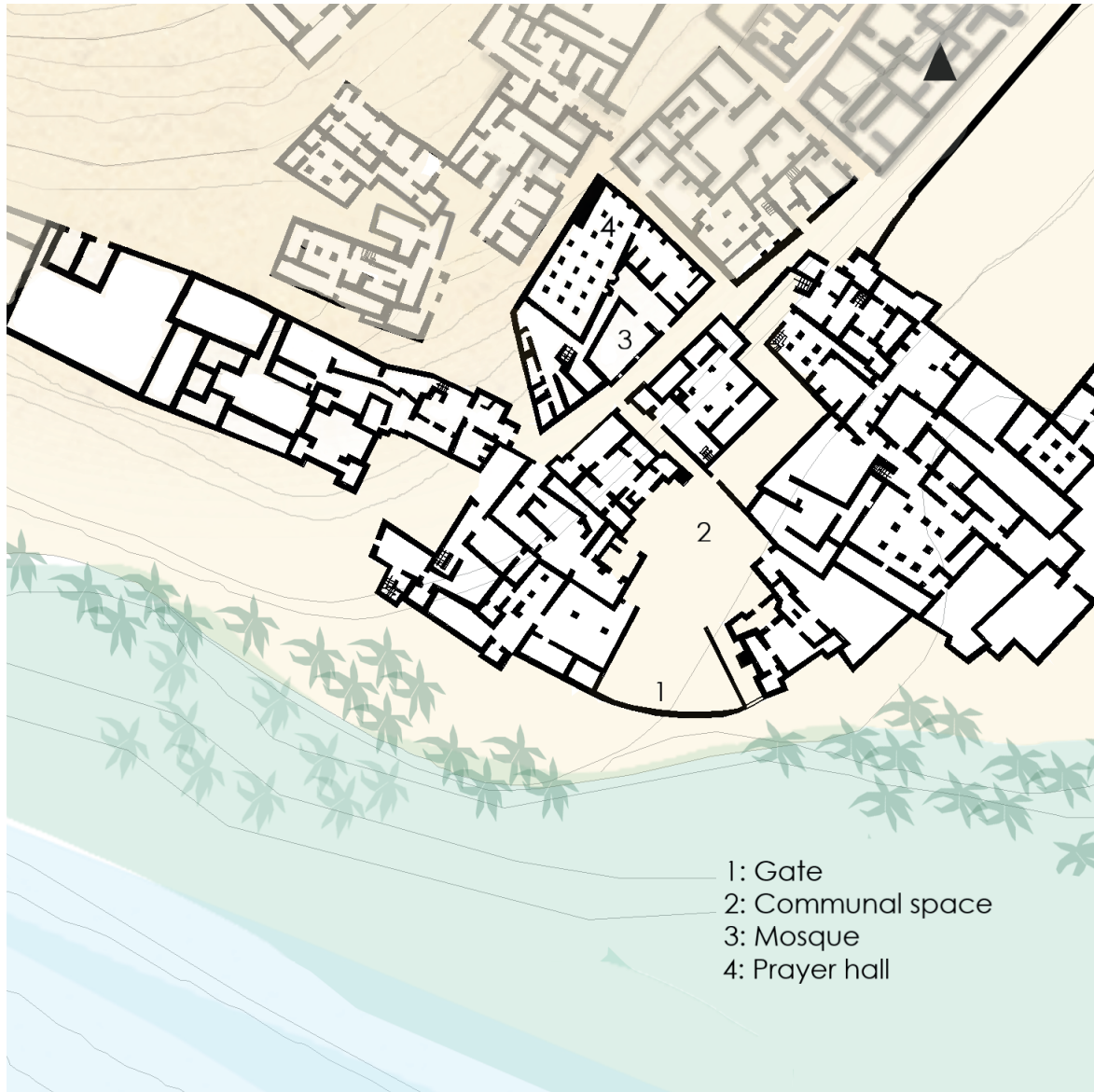


Figure 2. Schematic map of the latest formation phase illustrating the Kasbah district surrounding the mosque and the town from the valley route. Source: Author's work

The typo-morphological investigation reveals that urban growth is consistent with a progression of building types following geometrical guidelines of Berber quadrilateral form, representing the notion of enclosure, that develops from east to west towards the valley, suggesting the latest construction phase, the Kasbah (fortified castle) district, reflecting an organism in response to social, economic, and commercial activities that shape the urban tissue and the building form. Kasbahs are military castles that surround the Ksar and perform as observatory buildings that surveil inner streets and the surrounding territory.

The distribution of building types from southeast to southwest and in selective areas reveals the formation of the town according to the local conditions of the region,

amplifying the purposeful integration of cultural history in understanding the urban form.

The mosque provides a pristine example in this case, and its form clarifies the growth logic from a building level, as it presents a lucid illustration of the built form as a result of street deviation. The prayer hall in Berber cities illustrates the entity of the mosque, as it is a multipurpose room that serves as a Quranic school, prayer hall, social place, and shelter for passersby. The plan organization of the mosque identifies development parallel to street deviation and urban expansion. The prayer hall lies aligned with the previous existing street network and stands oriented towards the southeast, denoting the direction of Qibla (Fig. 2). The rest of the rooms form according to urban growth and the street network that connects attractor points, forging the urban grid.

Moreover, the mosque communicates social and economic progress, reflecting an organized society deeply related to its land development in correspondence to its cultural and geographical milieu. It presents a unique form compared to the built environment and illustrates the religious influence in shaping the urban tissue and crystallizing the development process.

Urban expansion is intelligible through a conscious spatial arrangement and urban development driven by cultural, social, and religious factors. The division of the fortified buildings that surround the Ksar from the valley route and encircle the mosque reflect the military history, the need for protection, and the adaptation of the town to survive hostilities in a military-active zone.

In Ait Benhaddou, streets illustrate social spaces, which can be non-covered or covered streets that provide shelter during the different climatic conditions and protect from the sun, heat, and rain. The urban tissue presents a predominantly narrow street network that highlights the sense of protection. With urban development, the creation of new social spaces like the mosque and the communal space presents the social and economic growth of the city.

The construction of Kasbahs (fortified castles) around the community space demonstrates organized urban growth and the leader's role in ensuring security by watching over the marketplace area, as it represents the place where foreign traders deposit their merchandise inside the Ksar, requiring the necessity of control and protection, where Kasbah observation towers ensure oversight inside and outside its limits.

Ait Benhaddou presents the Kasbah building type as a military development of the Tiguemi residential housing, which constitutes the traditional Berber villages and communicates urban growth in complete alliance with the land and the local circumstances, indicating the resilience and continuity of the Ait Benhaddou throughout military history.

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